CLAIMS

1. A laser irradiation method comprising:

changing a first laser beam emitted from a solid-state laser oscillator which oscillates a laser beam having a spectral width which is 0.1 nm or more into a second laser beam whose intensity distribution is homogenized by passing through a beam homogenizer;

making the second laser beam enter an irradiation surface; and

moving the second laser beam relative to the irradiation surface.

2. A laser irradiation method comprising:

changing a first laser beam emitted from a solid-state laser oscillator which oscillates a laser beam having a spectral width which is 0.1 nm or more into a second laser beam whose intensity distribution is homogenized by passing through a beam homogenizer;

changing the second laser beam into a third laser beam by using a condensing lens;

making the third laser beam enter an irradiation surface; and

moving the third laser beam relative to the irradiation surface.

3. A laser irradiation method comprising:

changing a first laser beam emitted from a solid-state laser oscillator which oscillates a laser beam having a spectral width which is 0.1 nm or more into a second laser beam whose intensity distribution is homogenized by passing through a beam homogenizer;

changing the second laser beam into a third laser beam by using a slit to block an end portion of the second laser beam;

making the third laser beam pass through a condensing lens and a projecting lens so that an image of the third laser beam formed by the slit is projected onto an irradiation surface; and

moving the irradiation surface relative to the laser beam.

4. The laser irradiation method according to any one of Claims 1 to 3, wherein the condensing lens is a convex cylindrical lens or a convex spherical lens.

5. The laser irradiation method according to any one of Claims 1 to 4, wherein the solid-state laser oscillator is a solid-state laser oscillator which includes a crystal of sapphire, YAG, ceramic YAG, ceramic Y_2O_3, KGW, KYW, Mg_2SiO_4, YLF, YVO_4, or $GdVO_4$ doped with at least one of Nd, Yb, Cr, Ti, Ho, and Er.

6. The laser irradiation method according to any one of Claims 1 to 5, wherein the laser beam is converted by a non-linear optical element.

7. The laser irradiation method according to any one of Claims 1 to 6, wherein the beam homogenizer uses any one of a cylindrical lens array, a light pipe, and a fly-eye lens.

8. A digital video camera, a digital camera, a navigation system, a sound reproduction device, a display, a mobile terminal, a thin film integrated circuit device, or a CPU manufactured by using the laser irradiation method according to any one of Claims 1 to 7.

9. A laser irradiation apparatus comprising:

a solid-state laser oscillator for oscillating a laser beam having a spectral width which is 0.1 nm or more;

a beam homogenizer for homogenizing intensity distribution of the laser beam emitted from the solid-state laser oscillator; and

means for moving an irradiation surface of the laser beam relative to the laser beam.

10. A laser irradiation apparatus comprising:

a solid-state laser oscillator for oscillating a laser beam having a spectral width which is 0.1 nm or more;

a beam homogenizer for homogenizing intensity distribution of the laser beam emitted from the solid-state laser oscillator;

a condensing lens for condensing the laser beam which has passed through the beam homogenizer; and

means for moving an irradiation surface relative to the laser beam.

11. A laser irradiation apparatus comprising:

a solid-state laser oscillator for oscillating a laser beam having a spectral width which is 0.1 nm or more;

a beam homogenizer for homogenizing intensity distribution of the laser beam emitted from the solid-state laser oscillator;

a slit for blocking an end portion of the laser beam whose intensity distribution has been homogenized by the beam homogenizer;

a condensing lens for condensing the laser beam;

a projecting lens for projecting an image of the laser beam formed by the slit onto an irradiation surface; and

means for moving the irradiation surface relative to the laser beam.

12. The laser irradiation apparatus according to Claim 10 or 11,

wherein the condensing lens is a convex cylindrical lens or a convex spherical lens.

13. The laser irradiation apparatus according to any one of Claims 9 to 12,

wherein the solid-state laser oscillator is a solid-state laser oscillator which includes a crystal of sapphire, YAG, ceramic YAG, ceramic Y_2O_3, KGW, KYW, Mg_2SiO_4, YLF, YVO_4, or $GdVO_4$ doped with at least one of Nd, Yb, Cr, Ti, Ho, and Er.

14. The laser irradiation apparatus according to any one of Claims 9 to 13, wherein the laser beam is a harmonic converted by a non-linear optical element.

15. The laser irradiation apparatus according to any one of Claims 9 to 14, wherein the beam homogenizer is any one of a cylindrical lens array, a light pipe, and a fly-eye lens.

16. A digital video camera, a digital camera, a navigation system, a sound reproduction device, a display, a mobile terminal, a thin film integrated circuit device, or a CPU manufactured by using the laser irradiation apparatus according to any one of Claims 9 to 15.